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Missouri 1997 Prenatal Drug Prevalence Study

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The Missouri Department of Health is mandated to conduct periodic statewide drug prevalence studies to determine the extent of tobacco, alcohol and illegal substance use during pregnancy. This charge is the result of legislation passed in 1991 (sections 191.725–191.745, RSMo) which addresses assessment, education, and referral for drug usage during pregnancy. What follows are the results of the 1997 study with a comparison to the initial 1993 study.[1] Both studies had the same overall design to facilitate comparison.

Methods

A statewide sample of delivering women was secured utilizing a multi-stage probability proportional to size sampling design. Using events from January through May 1996, 65 non-military hospitals in Missouri expected to experience a minimum of 200 deliveries in 1997 were selected for the sampling frame. These hospitals represented approximately 96 percent of the Missouri resident births during that time period.

The state was divided into three major regions. Within each region, probability proportional to size sampling was performed to randomly select eight hospitals from the St. Louis metro region, five from the Kansas City metro region and nine from the remaining outstate region. Before the randomly selected hospitals were acquired, one hospital in the Kansas City metro, one in outstate, and two in the St. Louis metro regions were pulled out and included in the study as self-representors because of the likelihood that their obstetrical population would be cocaine users. This was confirmed in the study. One hundred mothers were selected from each randomly selected hospital except for the four hospitals included as self-representors from which two hundred mothers were selected and certain other very large hospitals from which a number larger than 100 was required to adequately represent the hospital's maternal population.

The study sample represented 60 percent of the recorded births and fetal deaths for the hospitals involved during their respective study periods. The final sample was generally representative of the population of women delivering at the hospitals included in the sampling process when compared on the basis of recorded birth and fetal death records for that time period with regard to the distribution of race, age, Medicaid status and lack of prenatal care. The final maternal chart/urine sample size was 3,096 vs. 2,008 for 1993.

Data were collected during the period May through December 1997. The study population included all women admitted consecutively for delivery at each of the participating hospitals, with pregnancies of 20 weeks or more gestation. Each hospital initiated sample collection on a specified date with significant overlap of collection periods among most hospitals.

A portion of the routine urine specimen collected after admission for delivery was obtained for analysis. Demographic data; obstetrical history, including self-reported use of alcohol, tobacco and other drugs (licit and illicit) during pregnancy; prenatal care status and delivery information were acquired from the obstetrical floor charts and/or normal intake interviews. Additional information included delivery outcome, birth weight, gestational age and prescription medications.

All specimens were analyzed in a laboratory certified by the National Institute on Drug Abuse (University of Missouri, Toxicology Laboratory, Columbia. MO). Laboratory personnel received specimens labeled only with the coded identifiers.

For 1997, all positive screens were confirmed whereas for 1993 confirma-

(continued on page 2)

Inside this Issue...

(continued from page 1)
tion was completed for a sample of positive screens. Drug detection times vary widely with most illegal drugs traceable in urine a minimum of three days following their use with heavy users of marijuana remaining positive for up to two weeks after cessation.

Expansion weights were developed at the hospital level to represent that hospital's deliveries for one year and to account for over/undersampling. Post-stratification was utilized to adjust the sample's racial (black, non-black), birth weight (LBW, not LBW) and pregnancy outcome type (live birth, fetal death) distribution of deliveries to those of the population in the region and state for 1997. SUDAAN (SUrvey DAta ANalysis) was used to calculate the weighted prevalence estimates and standard errors, taking the sampling design into account for both the 1993 and 1997 studies.

Results

Table 1 shows significant decreases between 1993 and 1997 in estimated prevalence of alcohol (chart abstraction) and cocaine (urine specimen) usage just prior to delivery, with decreases of 54.4 and 46 percent, respectively. The estimated prevalence of cocaine usage decreased for both white non-Hispanic and black non-Hispanics from 0.3 to 0.2 and from 5.9 to 3.2 percent, respectively. The estimated prevalence of alcohol usage as detected by urine was 1.6 percent in 1997. This low estimate was expected because the detection period for alcohol in urine is very short (less than six hours on average). The prevalence of tobacco usage showed no significant change (21.9 in 1993 to 21.0 percent in 1997), while the prevalence of marijuana (4.0 vs. 4.3), methamphetamines (0.2 vs. 0.3) and phencyclidine (0.02 vs. 0.03) showed slight increases.

The estimated prevalence of illegal drug usage decreased by over 50 percent (10.8 in 1993 vs. 5.2 in 1997); however, this may be misleading because most of the decrease is due to barbiturate and opiate usage which have problems with ascertainment. Barbiturates and opiate detection in urine may signal illegal use in pregnancy or use of prescription medications that were not recorded in the chart abstraction process. Cocaine and marijuana combined showed a non-significant decrease from 1993 to 1997. Because of problems with differentiating illegal and legal usage of some drugs and very low detection of some drugs, only the four major substances (alcohol, tobacco, cocaine and marijuana) are discussed in detail in this article.

Significant variation in substance usage between race/ethnic groups was noted with Hispanics having the lowest prevalences for all but alcohol. White non-Hispanic women had significantly higher prevalence of tobacco usage (22.5 vs. 16.5 for blacks vs. 7.5 for Hispanics) than the other two groups. White non-Hispanic and black non-Hispanic women had significantly higher marijuana prevalence rates than Hispanics (4.5, 4.5 and 0.4 respectively). The black non-Hispanic prevalence rates for alcohol and cocaine were significantly higher than the corresponding rates for white non-Hispanics (4.1 vs. 1.2 and 3.2 vs. 0.2, respectively). No cocaine was detected in the urine specimens of Hispanic women.

Table 1. Overall Prevalence of Drug Exposure 1993 versus 1997, Missouri Prenatal Substance Abuse Studies, 1993 and 1997

	1993				1997			
	Chart Abstraction		Urine Specimen		Chart Abstraction		Urine Specimen	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI
Alcohol	7.9	1.3	NT	—	3.6**	0.8	1.6	0.6
Tobacco	22.5	3.4	21.9	3.6	21.7	3.3	21.0	3.1
Marijuana	1.3	0.5	4.0	1.1	1.6	0.6	4.3	1.0
Cocaine	1.1	0.5	1.3	0.6	0.7	0.3	0.7**	0.1
Opiates	NC	—	2.2	1.0	0.01	0.02	NC	—
Benzodiazepines	NC	—	1.3	0.6	NC	—	NC	—
Methamphetamines	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Barbiturates	NC	—	3.4	1.1	0.01	0.02	0.05	0.07
Phencyclidine (pcp)	NC	—	0.02	0.04	0.01	0.02	0.03	0.04
Any drug	25.7	3.4	28.1	3.7	23.6	3.3	23.8	3.3
Illegal drugs	2.0	0.7	10.8	2.5	2.2	0.7	5.2	1.0
Number	**2,213**		**2,213**		**3,096**		**3,096**	

*CI – 95% confidence interval
** Significantly lower (p <0.05) than the 1993 estimate
NT - Not tested for in urine
NC - No cases reported/identified

Table 2 shows prevalence estimates in relation to maternal age. In all cases but cocaine the highest prevalence estimates are noted for the 20–24 age group. For cocaine, the highest prevalence rate was noted for the 30 or more age group, with all age groups 20 and over having significantly higher rates than noted for ages under 20. The trends by age for cocaine usage do not reflect all races because of its low prevalence in non-black groups. For black non-Hispanic women, the estimate of cocaine usage increased from zero for ages under 20 to 10 percent for women ages 30 or older.

The tobacco prevalence for the under 20 age group as measured by urine specimens increased from 17.1 to 23.2 for 1997, with a less dramatic increase noted for women ages 20–24 (25.2 to 27.1). These results of increases in smoking prevalences for these two age groups have also been detected using birth certificate data.[2]

As reflected in Table 3 and from prior studies, "no prenatal care" is one of the major indicators of whether a woman is using one or more of the four substances. Of those women not receiving prenatal care, one in 16 used alcohol, two in five smoked, one in seven used marijuana and over one in five used cocaine. Tobacco usage was significantly higher for all women coming into prenatal care after the first trimester; and marijuana and cocaine usage were significantly higher for third trimester entry than first. Alcohol usage from urine analysis

(continued on page 4)

Table 2. Weighted Age-Specific Prevalence of Prenatal Drug Exposure, Missouri Prenatal Substance Abuse Study, 1997

	Maternal Age							
	Under 20 (1)		20–24 (2)		25–29 (3)		30 or Older (4)	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI
Alcohol	1.9	1.6	2.5 (4)	1.2	1.5	1.0	0.8	0.6
Tobacco	23.2	4.9	27.1 (3,4)	4.2	18.2	4.1	16.9	4.6
Marijuana	4.9	2.3	5.6 (3,4)	1.4	3.5	1.3	3.8	1.6
Cocaine	NC	—	0.7 (1)	0.5	0.5 (1)	0.3	1.2 (1)	0.8
Number	**520**		**856**		**856**		**848**	

The number(s) in parentheses indicate the other age groups with prevalence estimates significantly lower ($p < 0.05$) than the estimate for the age group under which the numbers are given.
*CI – 95% confidence interva
NC - No cases reported/identifiedl

Table 3. Weighted Prenatal Care-Specific Prevalence of Prenatal Drug Exposure, Missouri Prenatal Substance Abuse Study, 1997

	Trimester Prenatal Care Began							
	First (1)		Second (2)		Third (3)		No Care (4)	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI
Alcohol	1.5	0.6	2.0	1.3	0.5	1.0	6.1	9.7
Tobacco	18.5	3.0	28.7 (1)	5.3	39.3 (1)	15.1	43.9 (1)	15.5
Marijuana	3.6	1.0	5.0	1.9	13.9 (1)	8.9	14.8	12.1
Cocaine	0.2	0.15	0.7	0.6	3.1 (1)	2.9	21.9 (1,2,3)	14.4
Number	**2,196**		**500**		**109**		**51**	

The number(s) in parentheses indicate the other prenatal care groups with prevalence estimates significantly lower ($p < 0.05$) than the estimate for the care group under which the numbers are given.
*CI – 95% confidence interval

Table 4. Weighted Birth Weight-Specific Prevalence of Prenatal Drug Exposure by Race, Missouri Prenatal Substance Abuse Study, 1997

	All Races				White Non-Hispanic				Black Non-Hispanic			
	LBW		Not LBW		LBW		Not LBW		LBW		Not LBW	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Alcohol	0.8	1.2	1.7	0.6	1.2	1.7	1.1	0.7	NC	—	4.8	1.6
Tobacco	30.7**	7.4	20.1	3.4	29.9	7.5	21.9	3.9	33.3**	18.4	14.1	3.1
Marijuana	5.9	4.7	4.2	1.0	8.7	7.2	4.2	1.0	NC	—	5.2	1.9
Cocaine	3.3**	2.7	0.5	0.2	0.8	1.2	0.2	0.2	10.2	9.4	2.2	1.2
Number	**219**		**2,855**		**151**		**2,035**		**57**		**634**	

*CI – 95% confidence interval
**Significantly higher ($p < 0.05$) than the not LBW group
NC - No cases reported/identified

(continued from page 3)
showed no significant discernible differences by trimester care began.

Table 4 shows significantly higher prevalence of cocaine and tobacco usage for women having low-birth-weight (LBW) infants (less than 2500 grams). There were no significant associations between substance use and LBW for white non-Hispanic women; however, for black non-Hispanic women tobacco use was significantly more prevalent in the LBW group.

Prevalence rates were also calculated for expected payment source, region of residence, prior live births and prematurity. Women in the Medicaid group had significantly higher prevalence of alcohol, tobacco, marijuana and cocaine usage than the private insurance group, and their usage was also significantly higher than the self-pay group for tobacco and cocaine. Significantly higher ($p<0.05$) prevalence estimates were found for tobacco and marijuana usage in outstate Missouri compared to the Kansas City metro region. The St. Louis metro region had a significantly higher estimate of alcohol usage than the outstate region. Both St. Louis and Kansas City metro regions had significantly higher rates of cocaine use than outstate Missouri. Women having one through four prior live births had significantly higher estimates of smoking prevalence than women having their first child. Cocaine prevalence increased with increasing birth order with women having three or more prior live births significantly more likely to use cocaine than first time mothers. Cocaine use was nearly ten times higher for women having preterm deliveries (3.8 versus 0.4) than for those having term deliveries.

Summary

All of the substances evaluated, including alcohol and tobacco, adversely effect pregnancy outcomes. The most prevalent substance used during pregnancy in 1993 and 1997 was tobacco, with estimated prevalence of more than one-in-five for both periods. Also of note is the increase in tobacco prevalence for antepartal teens and women in their early twenties. If their smoking behavior is reflective of all teens and young adult women, then we can expect an overall increase in smoking during pregnancy as this age cohort moves through the fertility range.

Estimates of prevalence rates for both alcohol and cocaine show significant decreases; while slight non-significant increases were observed for marijuana, amphetamines and phencyclidine.

As with the 1993 study, women having late or no prenatal care were most likely to use one or more of the substances reviewed. This means prenatal care providers have very little or no time to intervene for this subset of users. However, 72 percent of those using one

(continued on page 15)

Perinatal Substance Abuse Law

According to sections 191.725–745, RSMo, Missouri physicians are required to:

- **Counsel** pregnant patients on the effects of cigarettes, alcohol and controlled substances.
- **Obtain signatures** from patients indicating that they have received counseling.
- **Maintain signatures** in patients' medical files.
- **Identify** individuals with high risk pregnancies for substance abuse.
- **Inform** pregnant women using controlled substances about available intervention services.
- **Offer referrals** for service coordination by the Department of Health to any pregnant patients at risk or using alcohol or controlled substances.
- **Refer** for service coordination by the Department of Health all infants showing signs or symptoms of prenatal drug exposure or positive toxicology and written assessment for risk of neglect or abuse .
- **Comply** with the child/abuse neglect law (section 210.115, RSMo)

Any Missouri physician or health care provider complying with the above provisions in good faith, shall have immunity from any civil liability (section 191.743, RSMo).

For more information or to make a referral, please contact:

Missouri Department of Health
Bureau of Family Health
Perinatal Substance Abuse
Ph: (573) 751-6215

Haff Disease Associated with Eating Buffalo Fish—United States, 1997

Reprinted from the Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report, December 25, 1998, Vol. 47, No. 50.

Haff disease is a syndrome of unexplained rhabdomyolysis following consumption of certain types of fish; it is caused by an unidentified toxin. Rhabdomyolysis is a clinical syndrome caused by injury to skeletal muscle that results in release of muscle cell contents into the circulation (1). In 1997, six cases of Haff disease were identified in the United States (four in California and two in Missouri) among persons who ate buffalo fish (*Ictiobus cyprinellus*), a bottom-feeding species found mostly in the Mississippi River or its tributaries. This report summarizes the investigation of these cases.

Los Angeles County, California

Patients 1 and 2. On March 8, two Ukrainian sisters (patients 1 and 2), aged 70 and 73 years, respectively, and the husband of patient 2 (aged 75 years) ate fried buffalo fish. Eight hours after the meal, patient 1 experienced neck pain followed by stiffness in her arms. On arrival, emergency medical technicians noted both women were rigid, unable to move, and extremely sensitive even to light touch. On evaluation at a local hospital, the serum creatine kinase (CK) of patients 1 and 2 were 25,000 IU/L and 9454 IU/L, respectively (normal: <120 IU/L); the muscle/brain (MB)-fraction at the peak of the CK was 2.7% and 0.5% (normal: <5%). Patient 1 was treated with intravenous hydration and bicarbonate. Patient 2, who had a history of angina pectoris, also complained of chest pain. During hospitalization, an angiogram revealed occlusion of a coronary artery requiring dilatation. She was treated with nitrates and coumadin. The man did not become ill. Both sisters recovered. Main sequelae were newly diagnosed hypertension (patient 1) and diminished muscular strength (patient 2).

Patient 3. On March 9, a husband and wife (both aged 33 years) from Ukraine ate fried buffalo fish purchased from the same market where patients 1 and 2 purchased their fish. Eight hours after the meal, the husband experienced left-sided chest pain that radiated to his left arm and increased with deep inspiration. He was admitted to the same hospital as patients 1 and 2. A comprehensive cardiovascular examination did not reveal abnormalities except an elevated CK (4140 IU/L) with a CK-MB of 1.4% at the peak of the CK. He reported no history of angina pectoris and had not smoked for 2 years. He did not receive any special treatment. Following discharge, the patient has reported occasional chest pain that he had not noticed before this episode. His wife did not become ill.

St. Louis, Missouri

Patients 4 and 5. On June 8, a Ukrainian husband and wife (aged 66 and 58 years, respectively) ate a dish consisting of ground buffalo fish and carp. One hour later, the wife vomited. Six hours after the meal, they developed generalized body aches and muscle stiffness. On evaluation at a local hospital, the CK of patients 4 and 5 exceeded 17,700 IU/L, and the CK-MB were 4.8% and 4.5%, respectively. The husband had severe pain on inspiration, resulting in respiratory insufficiency requiring assisted venti-lation. His wife was treated with intravenous fluids and mannitol. Following the acute episode, the husband complained of more frequent headaches, and his wife continued to experience tearing eyes, easy fatigability, and pruritus after eating seafood.

Bakersfield, California

Patient 6. On August 8, an 87-year-old U.S.-born man vomited 30 minutes after eating one third of a fried buffalo fish. Twenty-one hours later, he awoke with extreme stiffness and generalized muscle tenderness. At a local emergency department, his CK was 2226 IU/L with a CK-MB of 2.1%. The patient was treated with intravenous fluids and analgesics. Following this episode, the patient suffered 6 months of muscle weakness, primarily in his legs.

Follow-Up Investigations

The origin of the buffalo fish eaten by patients 1, 2, 3 and 6 was traced to the same wholesaler in Louisiana who receives fish from approximately 25 fishermen who fish rivers in Louisiana. The fish for patients 4 and 5 were caught within a 100-mile radius of St. Louis, Missouri. The Food and Drug Administration is attempting to identify a toxin from recovered fish samples. The case histories suggest that the toxin is heat stable; no particular mode of preparation seems to increase risk for disease.

Editorial Note: During the 1920s, the name "Haff disease" was given to an illness characterized by severe muscle pain and stiffness that affected approximately 1,000 persons living along the Koenigsberg Haff, a brackish inlet of the Baltic Sea (1). Subsequent similar outbreaks were identified in Sweden and the former Soviet Union (2–4). Although the etiology was not determined, epidemiologic investigations linked illness to ingestion of fish, especially burbot.

The first reported case of Haff disease in the United States occurred in Texas in 1984 (M. Tormey, Los Angeles Department of Health Services, personal communication, 1997); five additional cases were reported in California during 1984–1986. All U.S. cases have been associated with eating buffalo fish.

Haff disease typically presents as a paroxysm of rhabdomyolysis, with accompanying muscle tenderness, rigidity, and dark brown urine. However,

(continued on page 6)

(continued from page 5)
as in patient 3, milder presentations also occur. Although the median incubation period for the patients in this report was 8 hours (range: 6–21 hours), symptoms generally appear approximately 18 hours after eating fish.

Laboratory features of Haff disease include a markedly elevated CK level with an MB fraction of <5%. Levels of other muscle enzymes (e.g., lactate dehydrogenase, glutamate oxalate transaminase, and glutamate pyruvate transaminase) also are elevated. Myoglobinuria is often mistaken for gross hematuria (5). Diagnosis is based on a compatible clinical history.

Treatment is supportive and consists of administering large volumes of fluid early in the course of illness to prevent myoglobin toxicity to the renal tubules (5). Possible complications include electrolyte disturbances, renal failure, and disseminated intravascular coagulation. Symptoms usually resolve within 2–3 days. Historically, the case-fatality rate is approximately 1% (1). Clinicians and public health practitioners are encountering an increasing variety of foodborne illnesses, in part because of a diversification of food preparation and eating habits. International travelers, members of ethnic groups with unique cuisines, and consumers of both imported and domestic specialty food items may be at risk for foodborne illnesses that are rare or have not been reported previously in the United States.

Clinicians should be aware of food exposures that pose a risk to their patients and routinely obtain food histories, even from those patients whose illness may not appear to be food-related.

Physicians who identify or suspect cases of Haff disease, based on the clinical presentation, laboratory parameters, and food history, should report them to public health authorities for initiation of traceback and recall of implicated food items. State health departments are requested to report to the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC, telephone (404) 639-2206.

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Missouri physicians who identify or suspect cases of Haff disease should report them to their local health department or to the Section of Communicable Disease Controland Veterinary Public Health at (800) 392-0272.

In the Breakers

☞ "Healthy People in Healthy Communities" is the 1999 theme for National Public Health Week, which will be celebrated April 5-11, 1999. This national celebration provides an opportunity to recognize the contributions of public health to the nation's well-being and to focus public attention on major health issues in our communities.

☞ **Preparing for the Next Influenza Pandemic**—Several Missourians were featured in a February 1999 live video conference on preparedness for pandemic influenza. Discussion and information was presented on the five major areas of the plan: surveillance, vaccine delivery, delivery of antiviral agents, emergency response and communications. If you would like to view a tape of the conference or have questions, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313. Pandemic Influenza: A Planning Guide for State and Local Officials is available via the Internet at http://www.cdc.gov/nip/temp/pandemic-flu.htm.

☞ **Summer Food Service Program**—Although children anxiously look forward to summer vacation, these three months can cause an additional financial hardship on some families who are barely making ends meet. For these families, summer is a time of concern. Many children in Missouri will miss the nutritious meals they receive at school every day. Thousands of students depend on free or reduced-price school breakfasts and lunches to get adequate nutrition. With your help we can be sure that children in Missouri have a healthy summer vacation. Join us in providing nutritious meals to low-income children in your area through the Summer Food Service Program. For more information, call the Department of Health at (888) 435-1464.

Recent Food Recalls

The following information is provided due to the numerous recalls of food products reported as contaminated with *Listeria*. As of February 26, 1999, only one probable case of *Listeria monocytogenes* associated with food recalls has been identified in Missouri.

What You Need to Know About Listeriosis

Listeriosis is a serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes.*

1. How great is the risk for listeriosis?

In the United States, an estimated 1,100 persons become seriously ill with listeriosis each year. Of these, approximately 250 die.

Pregnant women are at increased risk; about 10–20% of all listeriosis cases happen during pregnancy. Newborns, rather than the pregnant women themselves suffer the serious effects of infection in pregnancy.

Persons with weakened immune systems, such as those with cancer, diabetes, kidney disease, AIDS, or those taking certain medicines that can suppress the immune system, such as glucocorticoids or chemotherapy are also at increased risk for listeriosis.

Healthy adults and children occasionally get infected with *Listeria*, but they rarely become seriously ill.

2. How does *Listeria* get into food?

Listeria monocytogenes is found in soil and water and the intestines of animals. Vegetables can become contaminated from the soil or from manure used as fertilizer. Animals can carry the bacterium without appearing ill and can contaminate foods of animal origin such as meats and dairy products. The bacterium has been found in a variety of raw foods, such as uncooked meats and vegetables, as well as in processed foods that become contaminated after processing, such as soft cheeses and cold cuts at the deli counter. Unpasteurized (raw) milk or foods made from unpasteurized milk may contain the bacterium.

Listeria is killed by pasteurization, and heating procedures used to prepare ready-to-eat processed meats should be sufficient to kill the bacterium; however, unless good manufacturing practices are followed, contamination can occur after processing.

3. How do you get listeriosis?

You get listeriosis by eating food contaminated with *Listeria*. Babies can be born with listeriosis if their mothers eat contaminated food during pregnancy. Although healthy persons may consume contaminated foods without becoming ill, those at increased risk for infection can probably get listeriosis after eating food contaminated with even a few bacteria. Persons at risk can prevent *Listeria* infection by avoiding certain high risk foods and by handling food properly.

4. How do you know if you have listeriosis?

A person with listeriosis usually has fever, muscle aches, and sometimes gastrointestinal symptoms such as nausea or diarrhea. If infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can occur.

Infected pregnant women may experience only a mild, flu-like illness; however, infection during pregnancy can lead to premature delivery, infection of the new-born, or even stillbirth.

There is no routine screening test for susceptibility to listeriosis during pregnancy, as there is for rubella and some other congenital infections. If you have symptoms such as fever or stiff neck, consult your doctor. A blood or spinal fluid test (to cultivate the bacteria) will show if you have listeriosis. During pregnancy, a blood test is the most reliable way to find out if your symptoms are due to listeriosis.

5. Can listeriosis be treated?

When infection occurs during pregnancy, antibiotics given promptly to the pregnant woman can often prevent infection of the fetus or newborn. Babies with listeriosis receive the same antibiotics as adults, although a combination of antibiotics is often used until physicians are certain of the diagnosis. Even with prompt treatment, some infections result in death. This is particularly likely in the elderly and in persons with other serious medical problems.

6. How can you reduce your risk for listeriosis?

The general guidelines recommended for the prevention of listeriosis are similar to those used to help prevent other foodborne illnesses, such as salmonellosis. The general recommendations are:

- Cook thoroughly raw food from animal sources, such as beef, pork or poultry.
- Wash raw vegetables thoroughly before eating.
- Keep uncooked meats separate from vegetables and from cooked foods and ready-to-eat foods.
- Avoid raw (unpasteurized) milk or foods made from raw milk.
- Wash hands, knives, and cutting boards after handling uncooked foods.

For persons at high risk, such as pregnant women and persons with weakened immune systems, the recommendations are:

- Avoid soft cheeses such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese (Hard cheeses, processed cheeses, cream cheese, cottage cheese, or yogurt need not be avoided.)
- Cook until steaming hot left-over foods or ready-to-eat foods, such as hot dogs, before eating.
- Although the risk of listeriosis associated with foods from deli counters is relatively low, pregnant women and immunosuppressed persons may choose to avoid these foods or thoroughly reheat cold cuts before eating.

7. What is being done to reduce *Listeria* in food?

Government agencies and the food industry have taken steps to reduce contamination of food by the *Listeria* bacterium. The Food and Drug Administration and the U.S. Department of Agriculture monitor food regularly. When a processed food is found to be contaminated, food monitoring and plant inspection are intensified, and if necessary, the implicated food is recalled.

The Centers of Disease Control and Prevention's National Center for Infectious Diseases (NCID) is studying listeriosis in selected sites to help measure the impact of prevention activities and recognize trends in disease occurrence. NCID also assists local health departments in investigating outbreaks. Early detection and reporting of outbreaks of listeriosis to local and state health departments can help identify sources of infection and prevent more cases of the disease.

A new website has been established to help the public find government food safety information more readily. This site was developed by FDA's Center for Food Safety and Applied Nutrition in consultation with USDA's Food Safety Inspection Service. The site is located at http://www.FoodSafety.gov/.

***Listeria monocytogenes* is a reportable disease in Missouri. Cases should be reported promptly to your local health department or to the Section of Communicable Disease Control and Veterinary Public Health at (800) 392-0272.**

Times Beach Dioxin Incinerator Emissions Exposure Study

Scott Clardy
Brian Quinn
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Section for Environmental Public Health

The Missouri Department of Health (DOH) has been actively involved in assessing risks to human health from environmental contaminants since the presence of dioxin at Times Beach was announced in December 1982. The 1988 Environmental Protection Agency Record of Decision for the Times Beach Superfund Site and 26 other eastern Missouri dioxin sites called for incineration of dioxin-contaminated soils and other materials to destroy the dioxin, rather than storing it indefinitely. As the reality of dioxin incineration grew closer in the mid-1990s, some citizens grew increasingly concerned for their health and safety because of potential exposure to the incinerator emissions.

To ensure the incineration process was safe to area citizens DOH, in cooperation with the St. Louis University School of Public Health, conducted an exposure study of persons living in communities around the Times Beach incinerator. The study was designed to determine whether concentrations of dioxin in persons living near the incinerator increased significantly during the incineration process. If elevations of dioxin levels had been seen in study participants (determined through blood test analysis), DOH would have notified the community of its potential exposure in a relatively short time after the incineration process began. Based on the early results, DOH would have made recommendations to the regulatory environmental agencies to take action to protect the public health. To complete the study, DOH requested technical and financial assistance from the Agency for Toxic Substances and Disease Registry.

The incineration process at Times Beach began March 17, 1996, and was completed June 20, 1997. During that time, approximately 265,000 tons of soil and other materials contaminated with 2,3,7,8-tetracholorodibenzo-p-dioxin (TCDD) from 27 eastern Missouri dioxin sites were burned at the Times Beach Superfund site.

To begin the dioxin incinerator emissions exposure study, DOH conducted a complete census of communities in the areas determined to be at highest risk for exposure to incinerator emissions. Participants in the study group were selected from people living in these communities. A community in Manchester, Missouri, was selected as the comparison group and eligible residents were invited to participate. This area was selected because it is similar in many ways (race, gender, age make-up, socioeconomic status, etc.) to the study area, but had no risk of exposure to incinerator emissions. Results from the study group were compared to similar results from the comparison group, to determine the risk for potential exposure to the incinerator emissions.

Only persons between the ages of 18 and 65 were invited to participate in the study. There were 76 persons from the Eureka area (study group) and 74 persons from the Manchester area (comparison group). Persons asked to participate in the study were randomly chosen from a list of all persons in the communities determined to be eligible based on age, health status, and whether they had ever been directly exposed to high levels of dioxin (occupation, military, etc.).

The first round of blood samples was collected in September 1995, during the construction of the incinerator but prior to any testing of the facility. The second round of blood samples was collected in July 1996, about four months after the start of the dioxin incineration process (production burn). The final round of blood samples was collected in June 1997, immediately after the incineration process was completed. The samples were analyzed for TCDD, other isomers of dibenzodioxins (PCDDs) and dibenzofurans (PCDFs), and polychlorinated biphenyls (PCBs). Results were reported on a lipid-adjusted basis. All blood samples were analyzed by the Centers for Disease Control and Prevention, Atlanta.

The blood levels of most chemicals evaluated in this study decreased from pre-incineration to the end of the incineration. In general, these declines in blood levels were statistically significant.

The chemical of primary concern in this study was TCDD. Analysis conducted on blood samples from persons who completed all three blood collection rounds found the average of this chemical decreased in the study population from 1.79 parts per trillion (ppt) before the incineration began to 1.23 ppt after the incineration stopped. A similar decrease was observed in the comparison population, 1.46 ppt to 1.23 ppt.

TCDD is considered the most toxic of the PCDDs, PCDFs, and PCBs, but is only one member of these groups of chemicals that might produce adverse health effects. Members of these classes of compounds are often referred to as "dioxin-like compounds." One of the properties of this group is the ability to bind to the Aryl hydrocarbon (Ah) receptor. The ability of dioxin-like compounds to bind to the Ah locus is related to the compound's ability to produce a toxic effect. The relative binding constants of each dioxin-like compound were converted to a toxicity equivalency factor (TEF). Multiplication of this factor by the concentration of the compound resulted in TCDD equivalencies. Summing these equivalencies across all dioxin-like compounds

(continued on page 15)

Private Provider Access to MOHSAIC

Nancy Hoffman, R.N., M.S.N.
Center for Health Information Management and Epidemiology

The Missouri Department of Health recognizes that information, especially information on the immunization status of Missourians, is not only crucial to public health but to health care providers as well. Based on this belief, the department continues to expand access to the Missouri Health Strategic Architectures and Information Cooperative (MOHSAIC), a statewide integrated information system.

As of January 1999, all local public health agencies in Missouri had access to the initial MOHSAIC application. This contains generic registration, appointment scheduler, and immunization and vaccine inventory components often referred to as the "immunization central registry." MOHSAIC is the only state-supported immunization registry in Missouri. The centralized database is pre-populated with demographic information on all births registered in Missouri since 1994 and all WIC participants. The system also includes information on immunizations submitted for the past two years to the state Medicaid system. MOHSAIC interfaces with the Department of Social Services system to identify if a client is currently eligible for Medicaid services.

Beginning April 1, 1999, the Department of Health will focus its efforts on identifying and providing MOHSAIC access to private providers. This access can be accomplished using several methods. Providers without computers can work with their local public health agency to gain information about their clients. Providers with a computer that has Windows 95 can access the database via an "800" number using a modem and telephone line. An additional option is being developed that will allow providers with a computer that has Windows 95 to access the system through an Internet connection.

Missouri law (section 167.183, RSMo) allows the sharing of childhood immunization information with appropriate parties without a release of information. Security features have been implemented which limit access to MOHSAIC to those who have completed an access request form containing a confidentiality statement and have received their initial user identification and password. Regardless of which method a provider uses to connect to MOHSAIC, only those persons who have appropriate access will be able to retrieve data.

The anticipated benefits to providers include:

- Ready statewide access to client-specific immunization information. Immunization information is cumulative beginning with the first dose of hepatitis B vaccine indicated on the birth certificate. The electronic record follows the child from one provider to the next.
- Ability to print an official copy of the immunization record for school or day care enrollment.

NEW SCHOOL IMMUNIZATION REQUIREMENTS

New immunization requirements are expected for the 1999-2000 school year. The Department of Health, Section of Vaccine-Preventable and Tuberculosis Disease Elimination is amending the School Immunization Rule to more closely follow the recommendations of the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP). The proposed changes include:

- Requiring three (3) doses of Hepatitis B (HB) vaccine for students entering grade seven (7),
  and
- Requiring four (4) doses of diphtheria, tetanus and pertussis (DTaP/DTP) vaccine for students entering kindergarten.

In addition, the polio section of the rule has been updated to include the use of either the IPV/OPV sequential schedule, an all-IPV schedule, or an all-OPV schedule. If a combination of IPV and OPV is used, four (4) doses are required.

The rule amendment was filed with the Secretary of State's office in January and should become effective for the 1999–2000 school year.

Questions concerning the rule changes should be directed to the section at (800) 699-2313.

- Ability to generate notices to remind clients of upcoming scheduled vaccinations or to recall clients due for vaccinations.
- Reduced number of times a chart must be pulled to determine immunization status and create a copy of the immunization record.
- Decreased number of "Release of Information" forms that must be processed when a client changes providers.
- Decreased delay in determining the vaccine status of new or existing clients.
- Ability to identify when other household members are due for vaccinations.
- Ability to quickly identify clients at risk when an outbreak of a vaccine-preventable disease is identified.
- Ability to do Vaccines For Children (VFC) management and required reports (if provider uses the inventory component).
- Ability to identify clients who have received a dose of vaccine from a recalled lot (for providers using the inventory component).
- Ability to generate an electronic input file to perform clinical assessments using the Clinic Assessment Software Application (CASA) provided by the Centers for Disease Control and Prevention. See related article on this page.
- Ability to generate immunization rates by provider or plan.

For additional information about MOHSAIC, or to request a provider packet, contact your local public health agency, the Department of Health's Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313 or the Center for Health Information Management and Epidemiology at (573) 751-6272.

New Polio Vaccine Recommendation

The Advisory Committee on Immunization Practices (ACIP) changed its recommendation on administering polio vaccine at its meeting October 21–22, 1998. Two poliovirus vaccines are currently licensed in the United States: inactivated poliovirus (IPV) vaccine and oral poliovirus (OPV) vaccine. The ACIP, the American Academy of Pediatrics and the American Academy of Family Physicians now recommend that the first 2 doses of poliovirus vaccine should be IPV. The ACIP continues to recommend a sequential schedule of 2 doses of IPV administered at ages 2 and 4 months, followed by 2 doses of OPV at 12–18 months and 4–6 years. Use of IPV for all doses also is acceptable and is recommended for immunocompromised persons and their household contacts.

OPV is no longer recommended for the first 2 doses of the schedule and is acceptable only for special circumstances such as: children of parents who do not accept the recommended number of injections, late initiation of immunization which would require an unacceptable number of injections, and imminent travel to polio-endemic areas. OPV remains the vaccine of choice for mass immunization efforts, which are conducted primarily outside of the United States in the effort to eliminate wild poliovirus.

If you have questions regarding polio vaccines, please contact your district immunization representative or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Assessment of Immunization Rates

Vic Tomlinson
Wayne Fischer
Section of Vaccine-Preventable and Tuberculosis Disease Elimination

Approximately 70 percent of childhood immunizations in Missouri are now given in the private sector. As a result, the Missouri Department of Health is beginning to work with private physicians and other health care professionals to assure that children are appropriately immunized. A key strategy is to conduct Clinic Assessment Software Application (CASA) assessments in private provider practices to determine an immunization rate and to offer recommendations that may be helpful in raising that rate. Many physicians think that their rates are much higher than they actually are.

The department is starting with the 1,600 Vaccines for Children (VFC) providers in conducting these assessments. Other private providers will eventually be included. However, the nine department immunization representatives cannot accomplish this task alone. The department is asking for the help of its partners, such as managed care plans and local public health agencies, to make this initiative successful. Partners can assist in one or both of the following ways:

- Conduct assessments in private practices in collaboration with the immunization representatives.
- Be trained to provide these assessments without the assistance of the immunization representatives and then share the results with them.

The Department of Health will provide the training for CASA assessments. If you are interested in conducting these assessments or having them conducted in your practice, please call the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313. Your support is very much appreciated.

Recommendations for Prevention and Control of Tuberculosis Among Foreign-Born Persons

Lynelle Phillips, R.N., M.P.H.
Section of Vaccine Preventable and Tuberculosis Disease Elimination

During 1986–1997, the number of tuberculosis (TB) cases among foreign-born persons in the United States increased by 56 percent, from 4,925 cases (22% of the national total) to 7,702 cases (39% of the national total). As the percentage of reported TB cases among foreign-born persons continues to increase, the elimination of TB in the United States will depend increasingly on the elimination of TB among foreign-born persons.

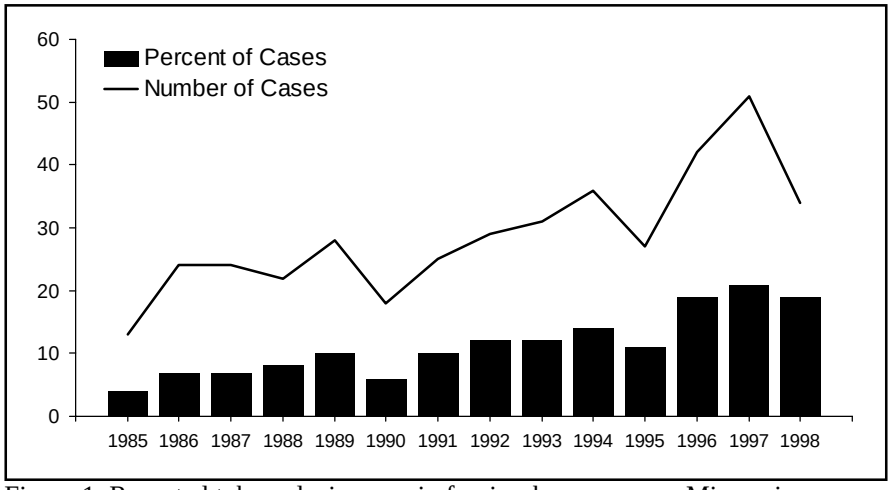


Figure 1. Reported tuberculosis cases in foreign-born persons, Missouri, 1985–1998.

On May 16–17, 1997, the Centers for Disease Control and Prevention (CDC) convened a working group of state and city TB-control program staff, as well as representatives from CDC's Division of TB Elimination and Division of Quarantine, to outline problems and propose solutions for addressing TB among foreign-born persons. The Working Group on Tuberculosis Among Foreign-Born Persons considered

a) Epidemiologic profiles of TB cases among foreign-born persons,
b) Case finding, screening, and preventive therapy for the foreign born,
c) TB diagnosis and management for the foreign born,
d) Opportunities for collaborations with community-based organizations (CBOs) to address TB among the foreign born, and
e) TB-related training needs.

The working group's deliberations and the resulting recommendations for action by federal agencies, state and local TB-control programs, CBOs, and private health-care providers were published as Recommendations for Prevention and Control of Tuberculosis Among Foreign-Born Persons—Report of the Working Group on Tuberculosis Among Foreign-Born Persons[1] in the Morbidity and Mortality Weekly Report, September 18, 1998, Vol. 47, No. RR-16. A copy of the full recommendations can be found at http://www.cdc.gov/epo/mmwr/preview/ind98_rr.html.

For each of the five topics of discussion, the working group identified key issues, problems, and constraints and suggested solutions in the form of recommendations, which are detailed in their report. The following is a summary of the working group's recommendations:

- The epidemiology of TB among foreign-born populations differs considerably from area to area. To tailor TB-control efforts to local needs, TB-control programs should develop epidemiologic profiles to identify groups of foreign-born persons in their jurisdictions who are at high risk for TB.
- The priorities of TB control among the foreign born should be the same as those for control of TB among other United States populations—completion of treatment by persons infected with active TB, contact tracing, and screening and provision of preventive therapy for groups at high risk. Screening and preventive therapy should be limited to areas where completion of therapy rates and contact-tracing activities are currently adequate.
- Based on local epidemiologic profiles, selective screening should be conducted among populations identified as being at high risk for TB. Screening should target groups of persons who are at the highest risk for TB infection and disease, accessible for screening, and likely to complete preventive therapy. The decision to screen for infection, disease, or both should be based on the person's age and time in the United States, prior screening, and locally available resources for the provision of preventive therapy.
- TB-control programs should direct efforts towards identifying impediments to TB diagnosis and care among local foreign-born populations, devising strategies to address these barriers, and maximizing activities to ensure completion of treatment.
- Providing TB preventive therapy and other TB-related services for foreign-born persons is often impeded by linguistic, cultural, and health-services barriers. TB-control programs can help overcome these barriers by establishing partnerships with CBOs and by

strengthening training and education efforts. Collaborations with health-service CBOs should center on developing more complementary roles, more effective coordination of services, and better use of existing resources for serving the foreign born. TB-related training should be linked to overall TB-control strategies for the foreign born. Training and education should be targeted to providers, patients, and community workers.

Missouri

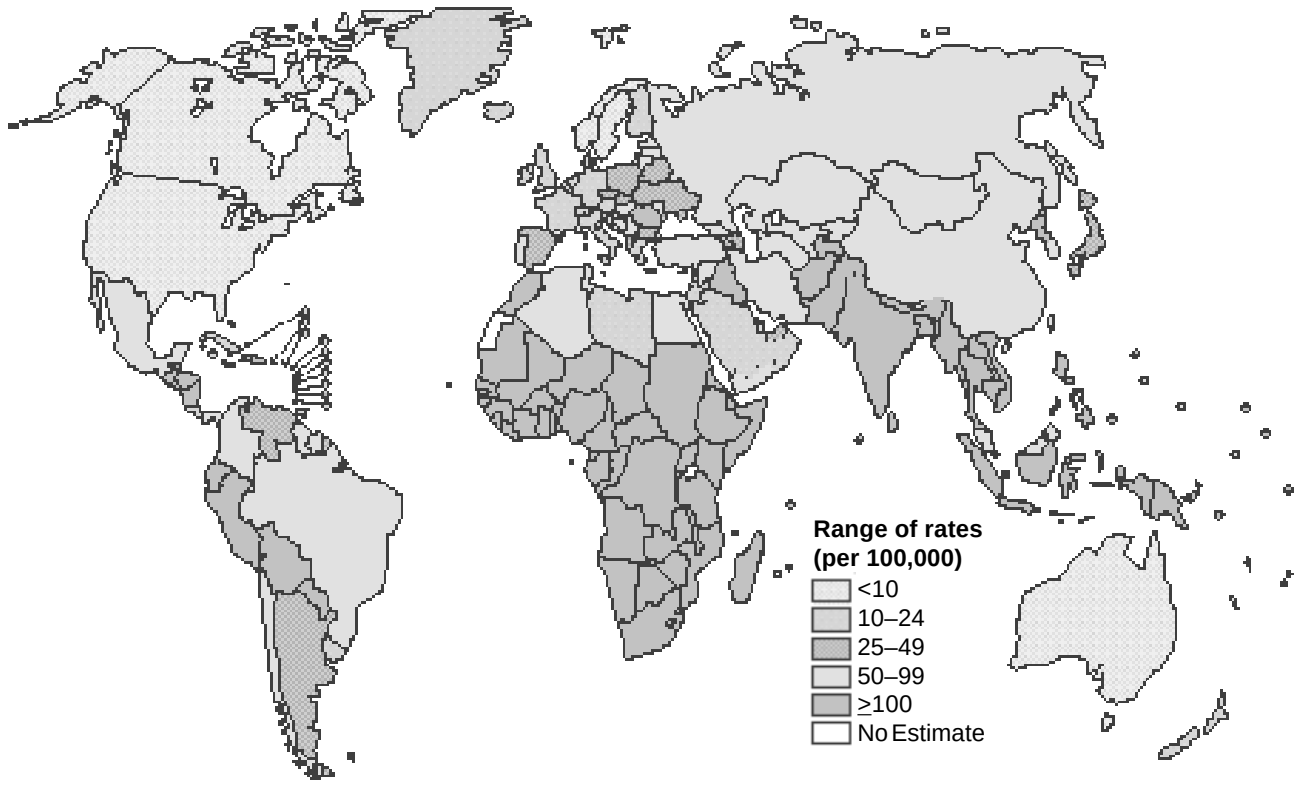
Data on TB incidence in Missouri's foreign-born mirror national trends. Missouri has seen disproportionate rates of TB in persons immigrating here from endemic countries. The number of foreign-born cases has also been steadily increasing, and reached an all time high in 1997. Foreign-born cases represented 21% (n=51) of the reported cases in 1997 and 18.6% (n=34) in 1998. See Figure 1. Asian/Pacific Islanders made up the majority of the foreign-born cases. Of note is the uncommon age distribution of foreign-born cases. Most cases (37%) occurred in the 25–44 year age group, rather than the 65–84 year age group seen in US-born cases. TB in younger adults is particularly significant in that it increases the likelihood of transmission to young children, as this age group coincides with the childbearing years. In addition, during the period 1993–1997, foreign-born Asians arriving in Missouri within the last five years in the 15–34 year and 55–74 year age groups had the highest rates of disease (45 and 87/100,000 person years, respectively).

Missouri has several recommendations for screening and treating tuberculosis in foreign-born from endemic countries. Consistent with CDC[2], Missouri's policy is to disregard history of BCG vaccination. It is not a contraindication to the Mantoux skin test, and if the result is 10 mm or greater in induration, this is considered to be positive, and the patient should receive a chest x-ray and be evaluated for infection treatment (generally, isoniazid for six months).

Recognizing that recent arrival to the United States from TB-endemic countries is a significant risk factor for the development of TB in foreign-born individuals, the Missouri Advisory Committee for the Elimination of TB (MACET) recommends that these individuals be considered high priority for TB screening and TB infection treatment.[3] Specifically, MACET recommends that foreign-born persons (including students, immigrants, and refugees), notably those from endemic

(continued on page 14)

Estimated Global Tuberculosis Incidence Rates, 1996



Tuberculosis Endemic Countries/Areas: Asia, Africa, Latin America, Eastern Europe (including Russia/Bosnia), Caribbean and Pacific Islands

Source of Map: World Health Organization Global Tuberculosis Programme, Global Tuberculosis Control WHO Report 1998. The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organizationconcerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines represent approximate border lines for which there may not yet be full agreement.

(continued from page 13)
countries, who have TB infection evident by a positive tuberculin reaction and who have been in the United States less than five years, receive TB infection treatment, **regardless of age**.

The American Academy of Pediatrics (AAP) recently revised their TB screening recommendations[4], and although routine screening of children is no longer recommended, AAP does recommend that foreign-born children, including those adopted from endemic countries, be screened with a Mantoux skin test. The tine test is no longer recommended by AAP because of poor sensitivity and specificity.

The Missouri Department of Health has recently made the following recommendations[5] for the state's university and college campuses:

1. As a condition of enrollment, all foreign-born students and faculty should be required to have a Mantoux skin test, and
2. As a condition of enrollment, all foreign-born students and faculty who are put on TB medications should be directly observed taking their medications through the student health center.

This strategy of directly observed therapy (DOT) is utilized for TB disease and infection to ensure compliance with taking the medication. The Department of Health has made these recommendations to address the fact that foreign students do not undergo TB screening as immigrants and refugees do. Also, the active TB cases that have been diagnosed on campuses have sometimes involved hundreds of contacts, due to their congregate setting.

We recognize that cultural barriers exist in persuading foreign-born individuals to undergo screening and treatment for tuberculosis, particularly if these clients have been BCG vaccinated. However, our experience indicates that they are indeed high-risk for tuberculosis, and warrant infection treatment if infected.

For more information and/or TB patient educational material in foreign languages, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 611-2912.

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Lyme Disease Vaccine Available

Susan Denny
Section of Vaccine Preventable and Tuberculosis Disease Elimination

On December 21, 1998, the Food and Drug Administration (FDA) licensed the first vaccine to aid in the prevention of Lyme disease, which is transmitted to people through the bites of ticks infected with the bacterium *Borrelia burgdorferi*. The new vaccine, with the trade name LYMErix, is approved for people aged 15 to 70 years.

Three doses of the vaccine are administered by intramuscular injection. The initial dose is follow by a second dose one month later and a third dose 12 months after the first.

Lyme disease is the most commonly reported vector-borne disease in the United States. Since the implementation of a standardized surveillance case definition in 1991, greater than 90 percent of cases have been reported from the northeast and north central United States. Persons of all ages are susceptible to infection, but the highest reported rates of Lyme disease occur in children aged less than 15 years and adults aged 30-59 years. Transmission peaks from April through July.

Although LYMErix may provide protection for the majority of people, it does not prevent all cases of Lyme disease, and it does not provide protection from other tick-borne diseases. Therefore, people should continue to take standard preventive measures against infection, including wearing protective clothing, using tick repellent and removing attached ticks.

It is not known whether this vaccine would have any efficacy against the "Lyme-like" disease seen in many parts of Missouri because the agent has not been positively identified and the new vaccine has not been tested for efficacy against this disease. Missourians do travel to places in the United States where the classic Lyme disease is transmitted, and this vaccine would be appropriate to provide protection for such travelers.

For information on the incidence of borreliosis in Missouri, see "Tick-Borne Disease Summary - 1997," in the May-June 1998 issue of the *Missouri Epidemiologist*.

For more information on Lyme disease, call the Section of Communicable Disease Control and Veterinary Public Health at (800) 392-0272. For more information on the Lyme disease vaccine, call the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Times Beach Dioxin Exposure Study

(continued from page 9)
resulted in the toxicity equivalence (TEQ). The TEQ was reported in parts per trillion (ppt) of TCDD in blood lipid. TEQ values decreased from 11.8 ppt to 8.21 ppt and from 10.82 ppt to 9.05 ppt in the study and comparison populations, respectively.

There were no differences in the average blood levels between the study and comparision groups for any analysis except 3,3',4,4',5P (PCB), which was slightly higher in the comparison population. No individual had results that were outside of normal background range for more than one chemical. In fact, none of the chemicals studied were at a serum level that was outside the range of values seen in the general population across the United States, except for octachlorodibenzo-p-dioxin, 1,2,3,4,7,8-hexachlorodibenzofuran, 1,2,3,6,7,8-hexachlorodibenzofuran, 1,2,3,4,6,7,8-heptachlorodibenzofuran and 3,3',4,4',5 PCB. In these cases, only one or two participants had blood levels outside of the background levels normally seen for any one of these five chemicals.

The results of this study clearly indicate that incineration of TCDD-contaminated soil and other material at the Times Beach incinerator did not result in any measurable exposure to the population surrounding the incinerator as indicated by the biomarkers TCDD and TEQ serum levels. These findings support the use of incineration for similar materials that are contaminated with dioxin-like compounds as long as the incineration is conducted in a similarly controlled manner with appropriate oversight.

If you have questions about the Times Beach Dioxin Incinerator Emissions Exposure Study, please contact Daryl Roberts or Scott Clardy in the Missouri Department of Health's Section for Environmental Public Health at (800) 392-7245.

Dr. Fazle Khan Joins Office of Surveillance

Fazle N. Khan, M.B.B.S., M.P.H., joined the Department of Health, Office of Surveillance as Epidemiology Specialist on November 16, 1998. He will be responsible for enhancing surveillance of vaccine-preventable diseases in the state. “As vaccine-preventable diseases (VPDs) become less prevalent, the role of surveillance has become more important. We’d like to make sure that the lowered incidence of VPDs reported in Missouri is indeed due to a true decrease in incidence and is not a decrease due to non-reporting or lowered reporting,” Khan said.

Dr. Khan is a native of Bangladesh. He received his medical degree from Mymensingh Medical College, Dhaka University, in 1982. After completing his internship, he worked as a physician in different rural and urban hospitals there. He earned a Diploma in Public Health from the National Institute of Preventive and Social Medicine, Dhaka University, in 1988, and then a Master's in Public Health from East Tennessee State University in 1992. Between 1992 and 1994, he worked as an epidemiologist for STD/AIDS in Augusta, Georgia. In September 1994, Khan joined the Idaho Department of Health and Welfare as Immunization Surveillance Specialist and was soon also appointed the Perinatal Hepatitis B Prevention Coordinator. In August 1998, he became the Primary Care Program Manager for the state. In November, he moved to Missouri to assume his current position with the Department of Health. Khan is married and has two children.

1997 Prenatal Drug Prevalence Study

(continued from page 4)
or more of the reviewed substances start prenatal care in the first trimester of pregnancy, and an additional 20 percent start care in the second trimester. For those using illegal substances, the corresponding percents are 64 and 18 respectively. Thus, for the majority of women using substances during pregnancy, there is time for assessment, education and appropriate referral. Missouri law requires that all prenatal care providers assess pregnant women for the risk and current use of alcohol, tobacco and other substances, and provide education regarding their effects on pregnant women and their fetuses. See sidebar. Verification of assessment and education must be documented in the prenatal record.

However, for there to be any significant decrease in substance use in pregnancy, there must be a decrease in the development of the habits. This means concerted efforts directed at children to not initiate these habits in the first place are needed.

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2. State Center for Health Statistics. Maternal smoking trends in Missouri: 1978–1997. Missouri Monthly Vital Statistics1998;32(6).

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The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

Reporting Children Taken From Former Methamphetamine Labs

Illegal meth lab sites are properties that were used for making methamphetamine. Typically, meth labs can be found in houses, apartments, motel rooms, sheds or even vehicles. The production of methamphetamine requires a lab-like setting with heat sources, laboratory equipment and many chemicals including sulfuric acid, ether, sodium hydroxide, lantern fuel (or some other hydrocarbon source), red phosphorus, anhydrous ammonia, acetone and others. The number of meth labs in Missouri has increased dramatically in recent years. Approximately 600 labs were seized in 1997. That number increased to approximately 900 labs in 1998. These labs are found in both metropolitan and rural areas.

The rising number of meth labs in Missouri has resulted in many public health issues, one of which is suspected adverse health effects due to exposure to these chemicals by children (defined as persons <17 years of age) taken from meth labs. Due to the rising number of meth lab seizures, the Missouri Department of Health, Section for Environmental Public Health is requesting assistance from the medical community. In an effort to assess how many children are being affected by exposure to these chemicals, the department is asking hospitals or physicians to report any children they treat who have been, or are suspected of having been, exposed to a meth lab or meth lab chemicals.

Reports can be made to the Department of Health on the standard Disease Case Report (CD-1) form, by phone at (800) 392-7245 or by fax at (573) 526-6946.

If you have questions on reporting, please contact Lori Harris or Scott Clardy at (800) 392-7245.